**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs, 14-18: **Network communication standards**

**Networks are classified according to below and we will study the following:**

1. **Network Categories: LAN, WAN**
2. **Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**
3. **Network communication standards**
4. **Network hardware and software**
5. **Transmission media**
6. **Network security**

**Network communication standards**

1. Why are network standards required?

For different devices on a network to be able to communicate, they must use similar techniques for moving data through the network from one application or resource to another.

1. What is a protocol?

A protocol is a standard that defines how two computers or devices on a network transmit data.

1. What is the OSI?

The Open Systems Interconnection (OSI) is a standard for network communications that defines a model for using protocols in seven layers. Each layer only uses the functions of the layer below it, and only passes functionality to the layer above.

**Ethernet**

1. Describe the nature of Ethernet.

Ethernet is a network standard that describes communication over a single cable shared by all devices on the network.

1. What are frames?

Ethernet communicates between nodes in short messages called frames.

1. Identify the 4 components of all Ethernet frames.
2. Fig. 1-9 on p 17 lists the Ethernet type, cable type, maximum length and transfer rate for Ethernet transmissions. The College typically uses 100BaseTX, Cat 5 or10Gbase-T. What are their respective maximum lengths and transfer rates?

100BaseTX – max length: 180m transfer rate: 10 Mbps

Cat 5 – max length : ?? transfer rate: ??

10Gbase-T – max length: 85m transfer rate: 10 Gbps

**TCP/IP**

1. Describe the nature of TCP/IP.

The most common method of packaging data for network transmission these days in TCP/IP (Transmission Control Protocol/Internet Protocol). This is the protocol on which the Internet is based. The TCP/IP protocol defines how data is carried from one part of a network to another

1. TCP/IP uses smaller packets than other protocols. Why is this an advantage on the internet?

TCP/IP uses a small packet size compared to other network protocols. This is a distinct advantage on the internet. There are usually many different pathways from the originating device to the destination device and the packets do not necessarily all travel the same path. Smaller packets give many more options to the network management software to enable load balancing. Sequencing information sent with the packets is used by the receiving device to reassemble the data from all the packets that it has been sent.

**802.11 wireless standard**

**1** What does this standard do?

The 802.11 standard defines how two computers or devices can communicate using radio waves. A network that uses the 802.11 standard is known as a wi-fi network.

2 What is a Wi-Fi network?

Wi-fi networks allow computers that are up to 50 metres apart to be connected without the need for wires.

3 Different wireless standards transmit at different frequencies. What is the advantage of the newer 802.11n standard?

Wi-fi networks that use the 802.11b or 802.11g standards transmit data at a frequency of 2.4 GHz, while the 802.11a standard uses 5 GHz. The newer 802.11n standard operates at 5 GHz or 2.4 GHz and is expected to be faster and support a larger range (up to 70 metres indoors) than previous standards.